

# MEETING THE NEED FOR PHYSICS TEACHERS

## After a longstanding shortage of specialist physics teachers, recruitment is increasing. But there's still work to be done



Professor Peter Main  
Director, Education and Science,  
Institute of Physics

**A good teacher can be a powerful influence on students' minds, nurturing abilities that are used not only throughout the school years but also far beyond. The Institute of Physics is pleased, then, that the future is starting to look a lot brighter for the recruitment of physics teachers.**

The subject had suffered a shortage of specialist teachers for a long time. Where it would have taken 450 new teachers qualifying every year just to keep the already woefully low number of active physics teachers level, only around 400 people were being recruited into physics teaching. On top of this, many leave within five years and only half of them will remain after 13 years. The situation has been compared to a bath with the plug out and the taps only half on, and it left around 500 state schools in England without any specialist physics teacher at all.

This matters. Specialists have been shown to teach higher-quality lessons, on average, compared with non-specialists. With good teaching a prerequisite for educating a future generation of physicists and engineers to maintain the UK's strong science base, and the importance of physics to the country's economy generally, this could add up to a serious problem.

Over the past five years or so, however, teacher recruitment has been on the rise. Last year saw the largest number of people starting physics-teaching courses for 30 years, and initial figures suggest that that number will be surpassed once again this year for another record number of new trainee physics teachers.

The setting of separate targets for the recruitment of physics, biology and chemistry teachers, rather than "science" teachers, may have helped, having been recently introduced by government following longstanding campaigning by the Institute. But, interestingly, this increase has not been matched in the other sciences – recruitment of biology teachers is roughly static while numbers for chemistry and for maths have fallen. Something is different in the case of physics, and we think it is the result of work by IOP along with the Teaching Agency and Department for Education.

There are several things that we believe have contributed to the growth in the number of trainee physics teachers. The first is increased marketing activity on university campuses, directly promoting physics teaching as a career choice to undergraduates in physics and engineering.

The second is the creation of new teacher-training scholarships, funded by the Department for Education and administered by the Institute. The scholarships are worth £20,000 each to graduates with a first- or upper-second-class degree, and 115 of them were offered out of 550 applicants.

As well as increasing the number of trainee teachers, another aim of the scholarships – and one that the Institute shares with the government – was to attract more graduates with high academic achievement. They have been successful in doing so: the proportion of overall applications from graduates with these top

**. . . Something is different in the case of physics, and we think it is the result of work by IOP . . .**

degrees has increased from around 40% to 60%. In turn, the increase in the academic quality of applicants has helped to increase the prestige of teaching as a career – so that it is seen more and more as something that the best and brightest graduates choose to do.

Finally, the Institute has taken steps to remove one of the possible barriers to recruitment – the requirement to generalise. Because the individual disciplines of physics, chemistry and biology are lumped together under the umbrella of “science” in schools, prospective teachers of physics also have to train to teach one of the other subjects. This can be off-putting – many physicists won’t have studied biology themselves since the age of 16. The exact number of potential teachers it puts off is



### ... For the first year of these new teacher-training courses there were more than 300 applications. . .

difficult to quantify, but we do know that around a quarter of the physics graduates who enter the teaching profession choose

to train as teachers of maths, for which they are eminently qualified, rather than their own subject. The solution was to allow them to train to teach physics with maths rather than with one of the other sciences and in 2012, pilot courses were launched by the Teaching Agency. Not only were these removing one factor that puts off physics graduates, but they were also designed to attract engineers, who come with a very similar set of skills to those of physics graduates – but who are usually even further from chemistry and biology in terms of their training. For the first year of these new teacher-training courses there were more than 300 applications.

All this work has generated a marked improvement in the recruitment of physics teachers. But there is still some way to go before we can consider it a job done. To reach teacher numbers at the same level as biology and chemistry – around 10,000 teachers of each, across England’s state schools – we need to see 1000 physics teachers recruited annually. The

number of new teachers is approaching that target. It will need continuing support from policymakers if it is going to be achieved. We therefore welcome the Department for Education’s decision to continue funding the joint teacher-training scholarships programme for a further year. We also hope that combined physics and maths teacher-training courses are continued and developed to meet the demand which we have seen is there.

Our goal is a realistic one, and an important one. If we can raise and maintain teacher recruitment to the desired level, as we believe the recent changes will, then the UK can count on having enough physics teachers to produce a scientifically literate population, a highly skilled workforce, and a science base that is among the best in the world.

